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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/707,997	01/30/2004	Thomas F. McCall	030749KEL110	1996
32583	7590	12/15/2005	EXAMINER	
KELLOGG BROWN & ROOT, INC. 601 JEFFERSON AVENUE HOUSTON, TX 77002			NGUYEN, TAM M	
			ART UNIT	PAPER NUMBER
			1764	

DATE MAILED: 12/15/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/707,997

Applicant(s)

MCCALL ET AL.

Examiner

Tam M. Nguyen

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 27 September 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-39 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-39 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

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DETAILED ACTION

Response to Amendment

The rejection of claims 1 and 7-10 under 35 USC § 103 over Dean et al. Re. 33,728 is withdrawn by the examiner in view of the amendment filed on September 27, 2006.

A New non-final rejection follows.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later

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invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1 and 7-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dean et al. Re. 33,728.

Dean discloses an FCC process wherein a heavy oil feed having components boiling above 1000° F is charged into a riser reactor to contact with a hot catalyst at a temperature equal to or above the feed pseudo critical temperature and at a pressure of from atmospheric pressure to about 100 psig with a residence time in the range of 0.5 to 5 second to produce an effluent which is then separated from the spent catalyst. The effluent is then passed into a separation zone to separate the effluent into desired products whereas the spent catalyst is then regenerated to burn off coke that were deposited on the catalyst and returned to the reaction riser for reused. The regeneration zone is operated at a temperature of from 1250° F to 1600° F. Dean also discloses that the feed is mixed with light hydrocarbon. See col. 2, lines 16-38; col. 8, line 2 through col. 9, line 9-25; claims 1 and 10)

Dean does not specifically disclose that the feed has normal boiling points above 538° C (1000° F), does not disclose that the weight ratio of the solvating hydrocarbons to the heavy hydrocarbons to the heavy hydrocarbons of at least 2:1, does not specifically disclose that the reactor is operated at a pressure is above critical pressure.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the process of Dean by using a feeding having a normal boiling point greater than 1000° F because one of skill in the art would use any feed having boiling points greater than 600° F including a feed having a normal boiling point greater than

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1000° F with the expectation that any feed having boiling point greater than 600° F can be treated in the process of Dean.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the process of Dean by using the claimed weight ratio because one of skill in the art would use any ratio including the claimed ratio because it would be expected that the claimed ratio would reduce the high boiling point feed partial pressure and achieve desired atomized-vaporized dispersion contact of hydrocarbon feed with high temperature catalyst particles in the process.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the process Dean by operating process at a pressure above critical pressure because the Dean teaches that the process is operated at a pressure of from 1 to 100 atm and the feedstock comprises components boiling above 1050° F. Therefore, it is effective to operate the process at a pressure above critical pressure, which is less than 100 atm, when using a feedstock comprises components boiling above 1050° F.

Claims 2-6 and 11-39 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dean et al. Re. 33,728 in view of Johnson et al. (5,730,859) or Herbst et al. (4,966,681)

Dean does not disclose a step of recycling a portion of the product to the riser.

Both Johnson and Herbst disclose an FCC process wherein a portion of the product is recycled back to the reaction zone. (See Figures of both Johnson and Herbst)

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the process of Dean by recycling a portion of the product

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to the reaction zone because Both Johnson and Herbst teaches that the recycling step would increase the overall product.

Response to Arguments

The argument that Dean does not teach that the reactor is operated at above critical temperature and pressure is not persuasive. Dean teaches that the process is operated at a temperature above critical temperature and it is obvious to operate the process at a pressure which is above critical pressure as reason above.

The argument that Dean fails to teach or suggest the use of solvating hydrocarbon is not persuasive. Dean teaches that light normally gaseous hydrocarbons comprising C₃ is mixed with the feedstock. (See col. 8, lines 27-31)

The argument that Dean does not teach the weight ratio of solvating hydrocarbons to feed hydrocarbon of at least 2:1 is not persuasive because of the new rejection above.

The argument that neither Johnson nor Herbst teaches or suggests converting a high-boiling hydrocarbon with a hydrocarbon solvent at a solvent to feed ratio of at least 2:1 and at supercritical temperature and pressure of the feed-solvent mixture is not persuasive. The examiner relied upon either Johnson or Herbst to teach that in an FCC process, it is known to recycle at least a portion of the product back to the reaction zone.

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Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tam M. Nguyen whose telephone number is (571) 272-1452. The examiner can normally be reached on Monday through Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Glenn Caldarola can be reached on (571) 272-1444. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Tam M. Nguyen
Examiner
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TN

 12/8/05